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- a clamping device including a clamping block having an aperture, the aperture including an aperture surface;

a cutting tool including a front portion at which a cutting edge is disposed, and a shaft extending rearwardly from the front portion, the shaft being fixed in the aperture by a clamping force that is releasable to enable the shaft to be displaced relative to the clamping device to a desired position for properly orienting the cutting edge, the shaft including an outer envelope surface facing the aperture surface, and

a spring-loaded device projecting from one of the envelope surface and the aperture surface and yieldably engaging a recess formed in the other of the envelope surface and the aperture surface when the cutting tool and its cutting edge are in the desired position, to provide an indication that the cutting tool is in such desired position by requiring a sudden increase in a force necessary to displace the cutting tool from the desired position.

2. The cutting tool system according to claim 1 wherein the shaft, when the clamping force is released, is displaceable by being rotatable about a longitudinal axis of the shaft, the spring-loaded device opposing such rotation of the shaft.

5 3. The cutting tool system according to claim 1 wherein the shaft, when the clamping force is released, is displaceable along a longitudinal axis of the shaft, the spring-loaded device opposing such longitudinal movement of the shaft.

10 4. The cutting tool system according to claim 3 wherein the shaft, when the clamping force is released, is also displaceable by being rotatable about the longitudinal axis, the spring-loaded device opposing such rotation.

15 5. The cutting tool system according to claim 1 wherein the shaft portion and the aperture define a common longitudinal axis, the envelope surface being substantially cylindrical and the recess comprises a groove extending parallel to the longitudinal axis.

20 6. The cutting tool system according to claim 1 wherein the shaft portion and the aperture define a common longitudinal axis, the envelope surface being substantially cylindrical, the recess comprising at least one dimple.

7. The cutting tool system according to claim 6 wherein the at least one dimple comprises a line of dimples extending parallel to the axis.

5 8. The cutting tool system according to claim 1 wherein the shaft portion and the aperture define a common longitudinal axis, the recess comprising at least one groove lying in a plane oriented perpendicularly to the axis.

9. The cutting tool according to claim 8 wherein the at least one groove comprises a plurality of grooves spaced apart along the axis at regular intervals.

10 10. The cutting tool system according to claim 9 wherein the grooves are spaced apart by about 10 mm.

15 11. The cutting tool system according to claim 1 wherein the envelope surface and the aperture define a common longitudinal axis, the envelope surface and the aperture surface being of polygonal cross section, the recess comprising at least one groove lying in a plane oriented perpendicularly to the axis.

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12. The cutting tool system according to claim 11 wherein the at least one groove comprises a plurality of grooves spaced apart at regular intervals along the axis.

5 ~~8/22/04~~ 13. The cutting tool system according to claim 1 wherein the recess has a generally V-shaped cross section, the spring-loaded device including a rotatable element engaging the recess and a spring elastically biasing the rotatable element into the recess.

14. The cutting tool system according to claim 13 wherein the rotatable element is a sphere.

10 ~~8/22/04~~ 15. The cutting tool system according to claim 13 wherein the spring comprises a coil spring.

16. The cutting tool system according to claim 13 wherein the spring comprises an elastomer.

15 17. The cutting tool system according to claim 13 wherein a center of the rotatable element is situated outside of the recess.

18. The cutting tool system according to claim 17 wherein the recess defines a V-shape having an angle in the range of 35-85°.

19. The cutting tool system according to claim 18 wherein the angle is in the range of 55-65°.

5 20. The cutting tool system according to claim 18 wherein the angle is substantially 60°.

substantially
60°
21. A cutting tool comprising a front portion at which a cutting edge is disposed, and a shaft extending rearwardly from the front portion.

10 22. A tool-clamping device comprising a block having an aperture adapted to receive and clamp a shaft of a cutting tool, a spring-loaded device mounted in the block and including a shank-contact portion projecting into the aperture for yieldably contacting the shaft.

15 23. The tool-clamping device according to claim 22 wherein the shank-contact portion comprises a rotatable element biased toward the aperture by a spring.

24. The tool-clamping device according to claim 23 wherein the rotatable element comprises a sphere.

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